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ABSTRACT

Research was conducted to assess the role of staff development in improving the quality of computer-based instruction in grade K-12 schools. The sample consisted of contact persons in 171 districts and interviews were completed with 155 (91%). Results indicate 80% of these districts currently provide inservice computer training to teachers; the median amount available is 25 hours. Most also provide technical assistance to teachers with hardware problems (95%), locating and evaluating courseware (80%), and integrating the microcomputer into the curriculum (65%). The median number of microcomputers found in these districts is 35, or a ratio of two microcomputers per five teachers and three microcomputers per 100 students. Incentives for participation in computer inservice training are not common: the most common are commendations or publicity (47%), release time for classes (41%), salary credit (36%), and guaranteed access to microcomputers (35%). The most important incentive was among those least commonly found in this sample--a guarantee of computer access. It was found that traditional incentives dispensed by administrators to teachers have little effect in fostering teacher involvement with computers and distinctions between "extrinsic" incentives such as salary credit and "intrinsic" incentives such as professional recognition did not prove to be conceptually or empirically important. A bibliography is appended. (JB)

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A SURVEY OF INCENTIVES FOR STAFF DEVELOPMENT OF COMPUTER-BASED INSTRUCTION

John D. Winkler and Cathleen Stasz

April 1985

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Microcomputers have been heralded as a tool with great potential for improving the quality of instruction. While there is no doubt that the number of microcomputers available for instruction is increasing dramatically, the number of teachers with training and knowledge of how to use them effectively for instruction is lagging greatly (Isaacson, 1981; OTA, 1982). This shortage of trained teachers occurs for a number of reasons, including a lack of computer-related courses offered in teacher training institutions, the inability of economically pressed school districts to hire new teachers with computer training, and insufficient staff development programs. However, there is widespread recognition that more districts and schools will need to develop inservice programs to optimize computer use in classrooms, and that many current teachers will need some encouragement to participate (Shavelson et al., 1984; U. S. Department of Education Task Force, 1981).

The nature of incentives offered teachers will likely play a key role in encouraging their participation in staff development of microcomputer-based instruction. Presently, certain school districts use a variety of incentives to maximize teachers' participation in staff development programs, outside computer courses, conferences, and other activities that broaden their computer expertise. These incentives include incremental salary credit (Sheingold et al., 1981; Page and Wallig, 1983; Shavelson et al., 1984), reimbursement for outside courses (Coburn et al., 1982), release time (NEA, 1982; OTA, 1982; Shavelson et

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al., 1984), and new job titles with higher salaries for technically experienced teachers (OTA, 1982).

Unfortunately, while evidence indicates that incentives can stimulate teachers' participation in staff development activities, research that systematically examines relationships between various types of incentives offered to teachers and participation in microcomputer-related staff development has not been conducted. Our previous research, as well as that performed by others (e.g., Sheingold, et al., 1981) indicate that the effects of incentives may be less than straightforward. Thus, research is needed relating various types of incentives offered to teachers and staff development for microcomputer-based instruction. We report such research in this paper, addressing two related questions to determine how districts and schools can stimulate wider staff development: (1) What incentives do districts and schools provide for participation in staff development and what outcomes occur in response to the incentives? (2) What is the relative importance of various incentives and forms of support for encouraging participation in staff development?

CONCEPTUAL FRAMEWORK

We examined these issues within a larger study entitled "Effective Incentives for Teachers' Instructional Use of Computers." The purpose of this study, sponsored by the National Institute of Education, is to examine how different forms of *incentives* and *support* increase the *quality of computer-based instruction* and the role that *staff development* plays in this process.

We focus on the second issue in this paper. (The first issue is examined in Stasz and Winkler, 1985). Our conceptual framework identifies two areas of concern. The first is the nature of incentives and forms of support school administrations can provide to stimulate staff development activities. As in our companion paper reporting on the first phase of the research, we take a broad view of administrative policies in terms of their *incentive value* for encouraging microcomputer use. In addition to incentives and rewards as customarily conceived, these include technical assistance, fiscal support, organizational commitment, and teacher involvement in decision-making. Our hypotheses derive from the research literature as well as from the earlier phases of our research. For example, the literature suggests that "extrinsic" incentives such as salary credits might be less effective in encouraging novel practices than "intrinsic" incentives such as professional recognition (e.g., Griffin, 1983). However, the first phase of our study suggests that *both* forms of incentives may stimulate participation in staff development, and that *neither* may be as effective as simple technical support in maintaining improved classroom practices.

The second issue concerns the pivotal role of staff development as an object of incentives and subsequent stimulant of classroom practices. Staff development as a response to incentives implies variables measuring rates of participation by teachers, breadth of participation across grade levels and subject matters, and the acquisition of various computer skills inside and outside the formal staff development mechanisms. Then, assuming that its organization and content imparts particular competencies, staff development should influence the ways in

which computers are used for instruction. In this case, variables measuring features of the staff development program predict later classroom practices.

METHODS AND DATA SOURCES

These issues were examined in a national telephone survey of school administrators and teachers examining staff development for microcomputer-based instruction as a response to incentives and as a determinant of classroom practices. The survey began in mid-February, 1985, and occurred in two waves. In the first wave, we contacted a sample of individuals knowledgeable about district and school policies supporting inservice training and microcomputer use. These individuals comprise a random sample of designated district computer contact persons in K-12 public school districts from around the United States. These respondents were queried about microcomputer availability and staff development opportunities in the district, and support and incentives available to teachers who participate in staff development (if available) and use microcomputers for instruction. They also provided estimates of district-wide participation in staff development, as well as the representation of teachers of different subject matters and grade levels. Descriptive data on each district (e.g., size of teaching staff; enrollment) were also available as part of the original sampling frame.

District spokespersons were also asked to suggest teachers to contact who are current users of microcomputers as an instructional tool for teaching math, science, or English at the elementary or secondary level. In the second wave, we contacted a sample of these teachers to solicit information about their classroom microcomputer use, inservice

training experience, and opinions regarding the value of various incentives for encouraging staff development and effective computer use. Teachers were sampled to seek roughly equivalent numbers of elementary, secondary math, secondary science, and secondary English teachers.

In both waves, interviews lasted about 20 minutes each and followed a structured and closed-ended format, providing quantitative data that summarize the results of the survey with respect to the variables of interest.

RESULTS AND IMPLICATIONS

This paper reports the results of the district phase of the survey. Our starting sample consisted of contact persons in 171 districts, and we completed interviews with 155, for a response rate of 91 percent. Districts surveyed appear fairly diverse. The sample includes K-12 districts from 42 states. Roughly one-quarter of the districts are located in urban areas, while two-fifths are suburban, and one third are rural. Student enrollments in these districts range as follows: under 1000 students (26% of the districts); 1000-5000 students (37% of the districts); 5000-10,000 students (12%); 10,000-25,000 (14%); more than 25,000 students (12%). The median percentage of minority (non-white) students is 12 percent, while 11 percent of students (median) fall under the poverty guideline in these districts.

We found a respectable amount of variation present in these districts in the levels and kinds of support and incentives available to teachers who use microcomputers for instruction. Eighty percent of these districts currently provide inservice computer training to teachers; the median amount available is 25 hours. Most of these districts provide technical assistance to teachers with hardware

problems (95 percent), locating and evaluating courseware (80 percent) and integrating the microcomputer into the curriculum (65 percent). School resource persons are available in 66 percent of these districts.

Other administrative policies supporting computer use are also present for the majority of districts surveyed, including organizational commitment in the form of written goals for computer use (63 percent) and teacher involvement in decision-making about use of computers (82 percent) and about staff development (64 percent). Other areas demonstrate, however, that there is still room for improvement. The median number of microcomputers found in these districts is 35, which works out to a ratio of 2 microcomputers per 5 teachers and 3 microcomputers per 100 students. Incentives for participation in computer inservice training are not common. Among these districts, the most common incentives are "special recognition" such as commendations or publicity (47 percent), followed by release time for classes (41 percent), salary credit (36 percent), and guaranteed access to microcomputers (35 percent).

Our data analyses thus far have examined how the availability of staff development varies according to district characteristics such as size and students served (i.e., percent minority students). We have observed considerable variation in dimensions of staff development such as whether there are "advanced" courses for teachers (56 percent of districts surveyed) and whether inservice training occurs in teachers' schools (73 percent). Generally, we observe that as districts become more urbanized and larger in size, and as they possess more microcomputers in the absolute, more inservice training is likely to be found. This training is more likely to occur on a regularly scheduled

basis with advanced offerings, to be held at centralized sites rather than in teachers' schools, and to be taught by administrative staff. Computer staff development was unrelated to the percentage of minority students in the district or to the ratio of computers per teacher or student.

We have conducted some preliminary correlational and regression analyses that compare the relative influence of various incentives and forms of support in predicting participation in staff development activities. Measures of participation include: percent of teaching staff receiving training, and representation by grade level (elementary and secondary) and subject matter (math, science, and English).

Thus far, we find that larger proportions of teachers participate in computer inservice training in districts with more computers per teacher and when resource persons and staff development are available in teachers' schools. Teacher participation in deciding the content and form of staff development is also important, as are two incentives: release time to take classes and guaranteed access to computers upon completion. While these relationships are significant, regression analysis indicates that more computers per teacher and guaranteed access to them are the best predictors of participation.

Further analyses show that some groups of teachers are more sensitive to some incentives than others. For secondary teachers, more computers per teacher and teacher participation in decision-making about staff development increases representation, while elementary teachers respond to the availability of advanced classes and more "hands-on" time in training. They were also the only group of teachers for whom participation decreased when inservice participation was voluntary.

Finally, we have also observed some distinctive relationships for teachers of science and language arts. For both groups, more computers per teacher are very important determinants of participation. Regularly scheduled inservice training, and a larger available pool of district-purchased science courseware increased participation by science teachers. English teachers participated more when the district offered salary credit.

CONCLUSIONS AND IMPLICATIONS

These results have concrete implications for administrative policies guiding microcomputer accessibility, incentives, and the provision of staff development. As in our earlier study (Stasz and Winkler, 1985), technical support stands out as the policy with greatest incentive value for teachers. Interestingly, the most important incentive was among those least commonly found in this sample--a guarantee of computer access. In this study, an increased number of computers per teacher improves computer inservice participation across the board. Thus, administrative policies that increase the accessibility of microcomputers can encourage more widespread teacher involvement in inservice activities.

These results also show once again that traditional incentives dispensed by administrators to teachers have little effect in fostering teacher involvement with computers. In the end, distinctions between "extrinsic" incentives such as salary credit and "intrinsic" incentives such as professional recognition did not prove conceptually or empirically important. What mattered most is that teachers receive adequate technical support.

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